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ney demolished, states that the lightning came down like a huge ball of fire. The second chimney was about in the predicament of the first. The lightning had descended to the kitchen stovepipe, then followed it across the room sixteen feet, and tearing it apart, jumped two feet into the brick lining of the house, thence into the guttering on the side of the house, melting it in three or four places, thence down the pipe, tearing off the corner-boards of the house, and made its exit in a barrel of water.

The family were troubled with a sort of lassitude for two or three days, and with myself were affected with a severe nausea for about a week.

This wonderful, invisible, subtle element which is so terribly sudden and potent in its operations, we now look upon with more mystery than ever.

NOTES ON TEA ANALYSIS.

BY H. R. BULL.

The following notes on tea analysis were made while pursuing an inquiry concerning the adulterations found in our ordinary articles of food.

I had collected from our city grocers a variety of samples for analysis, ranging from the highest-priced to the cheapest teas in the market. The general methods used were those given in Wauklyn's work on tea, coffee and cocoa analysis, following the scheme proposed by him in the determination of ash and extracts.

Wauklyn's method of ash-determination was to incinerate a weighed quantity of the tea in a platinum crucible. I found, after a rather costly experience, that it would not do to use platinum crucibles. We had in the laboratory two new crucibles, which I used. I noticed, after the first incineration, that the bottom of the crucible was affected, and after the second it was cracked and eaten so badly that it was unfit for further use. Supposing it was due to poor platinum, I tried the other new crucible, and it was likewise ruined. An old crucible, that had been long in service, and was known to be of good material, was next tried; after two or three incinerations it also was spoiled. A little study on this convinced me that the bad effects on platinum were due to the presence of phosphoric acid, which is decomposed by heat. The platinum unites readily with phosphorus, forming the brittle silver-white, easily fusible phosphide of platinum, which spoiled the crucibles. Upon a subsequent quantitative determination, I found tea ash to contain 21.24 per cent. of $P_2 O_5$.

Porcelain crucibles were afterwards used, with quite satisfactory results. The percentages of ash in seven different teas were as follows:

Best Japan, price unknown,	5.158
Black Oolong, price unknown,	5.957
Japan, @ 70c.,	6.056
Japan, @ 50c.,	6.421
Japan, @ 50c.,	6.085
Young Hyson, @ 25c.	6.953
Japan siftings, @ 25c.,	12.849

By adding water to the ash in a beaker, grains of sand could be seen in every case. Probably some sand is necessarily accumulated in gathering and in transportation, but if the ash much exceeds 6 per cent. it is questionable whether it is not partly intentional. It may be noticed in the results given, that the ash increases much as the price diminishes.

Zöller has found that the ash of tea leaves from which all sand had been carefully removed contained 4.35 per cent. of silica. In the specimens under consideration I find the total amount of silica as follows, the figures being percentages of the ash:

Best Japan, price unknown,	7.734
Black Oolong, price unknown,	9.367
Japan, @ 70c.,	11.100
Japan, @ 50c.,	10.059
Young Hyson, @ 25c.	18.538
Japan siftings, @ 25c.	54.075

In these determinations the tea was taken as it is in commerce, without any attempt to remove impurities. Calculating then from Zöller's result for silica, the amount of sanding would be represented in my silica determinations by the excess of 4.35 per cent. In the Japan siftings the sand as an adulteration amounts to 6.89 per cent. of the weight of the tea.

The amount of extract, more than any other test, gives an insight to the real value of the tea as regards strength, as this term is popularly used.

Percentages of extract were:

Japan, best,	37.766
Oolong, black,	33.266
Japan, @ 70c.,	37.692
Japan, @ 50c.,	37.116
Young Hyson @ 25c.,	29.933
Japan siftings, @ 25c.,	27.450

The small percentage of extract in some cases, indicates that the tea leaves were partly spent, probably on account of being exposed to dampness in transportation; also, the extract would be governed somewhat by the amount of sand present.

It is very generally supposed that the cheaper teas contain mineral impurities, due to the method of curing. I tested in two of the cheaper teas for Pb. and Cu., the supposed impurities, but did not find either.

In general it may be said, that though teas are often adulterated, the adulterations are of a harmless nature, and generally governed in amount by the price.

METEOROLOGICAL SUMMARY FOR THE YEAR 1883.

PREPARED BY PROF. F. H. SNOW, OF THE UNIVERSITY OF KANSAS, FROM OBSERVATIONS TAKEN AT LAWRENCE.

The chief characteristics of the weather of 1883 were the low mean temperature of all its months except April, November and December; the unusually long period of immunity from severe frost; the large and well-distributed rainfall; the slight preponderance of northerly over southerly winds; the high average wind velocity; the very high mean barometer, surpassing that of any previous year of our sixteen years' record; and the remarkably brilliant and long-continued orange and crimson sunrise and sunset glow of the last five weeks of the year.

TEMPERATURE.

Mean temperature of the year, 51.66°, which is 1.87° below the mean of the fifteen preceding years. The highest temperature was 96.5°, on July 23d; the lowest was 14° below zero, on the 22d of January, giving a range for the year of 110.5°. Mean at 7 A. M., 45.76°; at 2 P. M., 60.42°; at 9 P. M., 51.66°.

Mean temperature of the winter months, 27.10°, which is 3.12° below the average winter temperature; of the spring, 53.38°, which is .61° below the average; of the summer, 73.20°, which is 3.17° below the average; of the autumn, 52.99°, which is .24° above the average.

The coldest month of the year was January, with mean temperature 19.65°; the coldest week was January 17th to 23d, mean temperature 4.66°; the coldest day was